

NOTES ON *CAREX AZUAYAE* AND *C. ENNEASTACHYA*
(CYPERACEAE) FROM SOUTH AMERICA

GERALD A. WHEELER

Department of Plant Biology, University of Minnesota,
St. Paul, MN 55108-1095

ABSTRACT. *Carex enneastachya* is the only member of section *Phacocystis* thus far known from northern South America. *Carex azuayae*, originally described from Ecuador, is here considered to be conspecific with *C. enneastachya*. Additionally, this note represents the first report of *C. enneastachya* from Bolivia.

Key Words: Bolivia, *Carex enneastachya*, *Carex* sect. *Phacocystis*, Colombia, Cyperaceae, Ecuador

Carex L. (Cyperaceae) is well represented worldwide, and it has been estimated that over 200 species occur in South America (Wheeler 1996). Sectional representation, however, can vary greatly from one continent to another. For instance, many members of *Carex* section *Phacocystis* Dumort. are known from North America (Mackenzie 1935; Standley 1985, 1987b) and Eurasia (Charkevich 1988; Chater 1980), but less than ten species are recognized from South America (Barros 1947; Clarke 1908; Jørgensen and Ulloa Ulloa 1994; Kükenthal 1909; Marticorena and Quezada 1985; Steyermark 1964). Moreover, out of the last group, only two species, *C. azuayae* Steyerm. and *C. enneastachya* C. B. Clarke, have been reported from the northern half of the continent. In this paper *C. azuayae*, which was originally described from Ecuador (Steyermark 1964), is considered to be conspecific with *C. enneastachya*, whose type collection comes from Colombia (Clarke 1908) and whose name has priority. In addition, *C. enneastachya* is here reported for the first time from Bolivia.

MORPHOLOGY AND DISCUSSION

Clarke (1908, p. 70) described *Carex enneastachya* from plants collected in Colombia and noted its apparent relationship to the Eurasian *C. acuta* L. (sect. *Phacocystis*). The holotype is characterized by having: leaves rather narrow (average width 2.8

mm); an inflorescence with 10 elongate, erect spikes; lowest bract much exceeding the inflorescence; perigynia stipitate (stipe 4–6 mm long), the body elliptic to broadly elliptical, minutely papillose, with 4–7 obscure nerves on each face; and achenes lenticular, with oval to obovate sides, and adnate to the spongy tissue filling the base of the perigynium. Although Clarke reported the holotype as having nine spikes, hence the epithet *enneastachya*, the single plant mounted on the herbarium sheet actually has 10 spikes, i.e., 4 staminate spikes (3 of which are appreciably smaller than the terminal spike) and 6 androgynous or pistillate spikes. As mounted on the type sheet, the smallest staminate spike is “hidden” beneath another lateral staminate spike, and it most likely was the one overlooked by Clarke.

In 1964, Steyermark (p. 337) described *Carex azuayae* from a collection made in Azuay Province in southern Ecuador and placed it in section *Phacocystis* (his section *Acutae*). He pointed out the affinities of *C. azuayae* to various North American and austral South American members of section *Phacocystis*, but made no mention of *C. enneastachya*. Steyermark noted that *C. azuayae* is characterized by having several (6–7) slender, elongate spikes, stipitate perigynia, and a lowermost bract that conspicuously exceeds the inflorescence. Moreover, both the F and US specimens (citations given below) have rather narrow leaves, minutely papillose perigynia, with 4–7 obscure nerves on each face, and oval to obovate lenticular achenes that are adnate to the spongy tissue filling the base of the perigynium. Indeed, an examination of type material of *C. enneastachya* and *C. azuayae* reveals that the two entities are conspecific, with the former name having priority. In this regard, it is notable that in a recent treatment of the seed plants of the high Andes of Ecuador, Jørgensen and Ulloa Ulloa (1994) used the name *C. azuayae* for the plants under consideration.

Because no English description of *Carex enneastachya* has previously been published, one is provided below.

Carex enneastachya C. B. Clarke, Bull. Misc. Inform., Add. Ser. 8: 70. 1908. TYPE: COLOMBIA. *Jameson 2* (HOLOTYPE: K!). [The exact locality and date of collection are unknown to me.]

Carex azuayae Steyermark, Phytologia 9: 337. 1964. TYPE: ECUADOR. Prov. Azuay: vicinity of Toreador, between Molleturo and Quinoas,

alt. 3785–3900 m, 15 Jun 1943, *Steyermark 53105* (HOLOTYPE: F!; ISOTYPE: US!).

Plants rhizomatous; rhizomes 2–3 mm thick, brownish. Fertile culms 28–56 cm tall, erect, trigonous, smooth, phyllopodic, with glabrous, pale brown to brown basal sheaths. Leaves (3–) 5–9, mostly on lower one-third of culm; blades 10–45 cm long, 1.8–4.4 (–5) mm wide, flat or convolute, glabrous, the margins finely antrorsely scabrous (especially in the distal half); leaf sheaths 1.5–4.5 cm long, glabrous, pale brown to brown; inner band of sheaths hyaline or pale brown, minutely purplish brown dotted, concave at the apex; ligules 1.5–4 mm long, subacute, hyaline, minutely purplish brown dotted. Inflorescences 9–15.5 cm long, with the spikes usually all strongly overlapping except sometimes the lowest one, which is (2–) 3.3–5.2 cm distant; spikes single at nodes, erect, all on stiff, smooth or sparingly scaberulent peduncles; lowermost spikes with peduncles 1.5–5.5 mm long, the uppermost lateral spikes sessile or nearly so; lowermost bracts with blades 12–22 cm long and 1.5–2.5 mm wide and sheaths 0.5–1.1 cm long, generally exceeding the inflorescence, the uppermost bracts much reduced. Spikes 6–10, the upper 1–4 staminate, the rest androgynous or pistillate. Terminal spikes 2.5–3.2 cm long, 3–5 mm wide, ca. 80–120-flowered; peduncles 5–10 mm long. Lateral staminate spikes (when present) smaller than the terminal spike, 0.8–1.5 cm long, ca. 10–30-flowered (pistillate flowers may occur sporadically on staminate spikes). Lateral androgynous or pistillate spikes 2–5 cm long; when androgynous staminate portion up to 0.6 cm long and ca. 5–20-flowered; pistillate portion 1.7–5 cm long, 3–4.5 mm wide, ca. 40–150-flowered. Pistillate scales 1.9–2.4 mm long, 0.8–1.3 mm wide, elliptic or slightly obovate, obtuse, purplish brown with narrow hyaline border and green or stramineous center, 1-veined, with the single vein extending almost to the apex of the scale but rarely excurrent as an awn. Staminate scales 2.5–4 mm long, 1.2–1.8 mm wide, elliptic or slightly obovate, obtuse, purplish brown with narrow hyaline border and green or stramineous center, 1-veined, with the single vein extending almost to the apex of the scale but rarely excurrent as an awn. Perigynia 2.2–2.8 mm long, 1.2–1.6 mm wide, broader than subtending scales, minutely papillose, biconvex with elliptic to broadly elliptical sides, with 4–7 obscure nerves on each face, tawny, often purplish-tinged in the distal two-thirds of the body,

stipitate (the stipe 0.4–0.6 mm long); perigynium beak 0.1–0.2 mm long, entire, purplish brown. Achenes 1.3–1.6 mm long, 1–1.4 mm wide, lenticular with oval to obovate sides, brown, adnate to spongy tissue filling base of perigynium. Stigmas 2. Anthers 3, 1.3–1.9 mm long.

ADDITIONAL SPECIMEN EXAMINED: **Bolivia**. Depto. La Paz, Prov. Nor Yungas: pasando Undauavi antes de llegar a Cotapata, subiendo la senda antigua hacia Coroico, 3500 m, 22 Oct 1994, *Beck 21499* (LBP, MIN).

Carex enneastachya is known from single collections in Bolivia, Colombia, and Ecuador. Although Beck's Bolivian collection has slightly immature perigynia and poorly developed achenes, the plants are clearly assignable to *C. enneastachya*, a species hitherto unknown from Bolivia. This species has been collected in páramo, at elevations from about 3500 to 3900 m, and grows in boggy and marshy places. In Bolivia the species apparently flowers in September and October, though in Ecuador plants with mature perigynia and ripe achenes have been collected in mid-June. The epithet *enneastachya*, which means literally "with nine spikes," is somewhat misleading because fertile culms of this species seem to bear anywhere from six to ten spikes. Moreover, as mentioned earlier, the single plant comprising the holotype actually has ten spikes.

This species appears to be most closely related to the *Carex lenticularis* Michaux complex of the Western Hemisphere, whose members are characterized by having perigynia that are weakly nerved, minutely papillose, and stipitate, with the proximal spongy-thickened tissue of the perigynium adnate to the base of the achene (Standley 1985, 1987b). Also, what Steyermark (1964, p. 338) called a "reticulate surface" in the achene of *C. enneastachya* (as *C. azuayae*) most likely is a "layer of translucent or iridescent cells," as reported by Standley (1985, p. 60) in *C. lenticularis* s.l. In addition to *C. enneastachya*, other Latin American members of this complex include: *C. decidua* Boott, which ranges from Tierra del Fuego northward to northern Patagonia and is also disjunct on the Falkland Islands (Barros 1947; Marticorena and Quezada 1985); *C. hermannii* Cochrane, a Mexican endemic with reportedly a restricted range (Cochrane 1981); and *C. cuchumatanaensis* Standl. & Steyermark from Guatemala. According to Standley (1987a, p. 13), these three last-mentioned species "form a cohesive group based on anatomical and micro-

morphological characters." Regarding the geography of this complex, *C. enneastachya* is critically situated between the species of Central America and the southern Andes.

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